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**ABSTRACT**

10 The invention solves the problem of maintaining RIF information in a router for  
populating the RIF field of packets routed by the router, by storing the RIF information  
with the Layer 2 address in the address binding table. The address binding table  
establishes a binding between a Layer 2 address and a Layer 3 address of a station. The  
Layer 2 address in the address binding table is extended to include the RIF information.  
The address binding table is normally maintained in the router in an architecture which  
15 permits rapid access for fast switching such as cut through routing. A separate RIF cache  
table, requiring a separate time consuming table look-up is thereby avoided. The address  
binding table is referred to as the ARP Table in IP protocol. The Layer 2 address is  
extended to include both MAC address and RIF information. The RIF information in the  
Layer 2 field of the ARP table is updated in response to execution of an ARP Explorer  
20 protocol by the router. RIF information is read from an ARP Explorer response packet  
and written into the Layer 2 field of the ARP table. The Layer 2 address, both MAC  
address and RIF information, is read from the ARP table for use in populating both the  
destination address field and the RIF field of a routed packet.

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